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Indian Standard
SPECIFICATION FOR INK, STAMP-PAD
(*Third Revision*)

UDC 667.53

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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 4 ***February* 1986**

AMENDMENT NO. 2 MAY 2005
TO
IS 393 : 1985 SPECIFICATION FOR INK, STAMP-PAD
(Third Revision)

(*Page* 4, *clause* **3**) — Delete and renumber the subsequent clauses.

(*Page* 4, *clause* **4.2.1**) — Substitute the following for the existing text:

The material shall contain not less than 35 percent and not more than 45 percent by volume of glycerine when determined as prescribed in **A-1** or **A-2**. In case of dispute the method given in **A-2** shall be the referee method.'

(CHD 14)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 1 SEPTEMBEER 1990
TO
IS 393:1985 SPECIFICATION FOR INK, STAMP-PAD

(*Third Revision*)

(*Page* 5, *clause* 4.4) - Insert the following after 4.4:

'4.5 **Keeping Properties** - When stored under cover in original sealed containers under normal temperature conditions, the material shall continue to conform to the requirements laid in 4 for at least two years from the date of manufacture.'

(CHD 14)

Reprography Unit, BIS, New Delhi, India

Indian Standard
SPECIFICATION FOR INK, STAMP-PAD
(*Third Revision*)

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(*Continued on page* 2)

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Indian Standard

SPECIFICATION FOR INK, STAMP-PAD

(*Third Revision*)

0. FOREWORD

0.1 This Indian Standard (Third Revision) was adopted by the Indian Standards Institution on 30 August 1985, after the draft finalized by the Inks and Allied Products Sectional Committee had been approved by the Chemical Division Council.

0.2 This standard was originally published in 1952. Since the dyes mentioned in that standard were proprietary items and were not available in the country, it was revised in 1968 prescribing colour index and hue number of the dyes as given in the Colour Index, 1957, second edition, published by Society of Dyers and Colourists, UK, and American Association of Textile Chemists and Colourists. Changes were also made in the sampling procedure. For marking ballot papers at the time of elections, a quick drying stamping ink is required so that there is no offset when ballot papers are folded before insertion in ballot box. The second revision covered the requirements of such quick drying inks. An additional requirement of colour fastness and its method of test has been incorporated.

0.3 In this revision an alternate method, namely, sodium periodate oxidation method for determination of glycerine, which is more accurate, has been added.

0.4 This standard contains **5.1** which calls for agreement between the purchaser and the supplier.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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*Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard prescribes requirements and the methods of sampling and test for stamp-pad ink used for stamping with rubber stamps from fabric or foam pads.

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given in IS : 4395-1967* shall apply.

3. GRADES

3.1 There shall be two grades of the ink, namely:

Grade A — Ink for general use; and

Grade B — Ink, quick drying.

4. REQUIREMENTS

4.1 Description — The material shall be in a fluid condition, in any one of the five colours, namely, violet†, blue, green, red or black, and shall be free from undissolved matter.

4.2 Composition

4.2.1 *Glycerol (Glycerine) Content* — Grade A of the material shall contain not less than 50 percent nor more than 60 percent by volume of glycerol (glycerine) and Grade B of the material shall contain not less than 35 percent and not more than 45 percent by volume of glycerine when determined as prescribed in **A-1** or **A-2**. In case of dispute the method given in **A-2** shall be the referee method.

4.2.2 *Foreign Matter* — The material shall contain no saccharous material, gums or other foreign matter.

4.2.3 *Dyestuffs* — For comparative test purposes, reference inks of different colours shall be used which shall be prepared by dissolving the dyestuffs indicated in Table 1 in the specified proportions in glycerol-water mixture (containing 55 percent of glycerol).

4.3 Performance

4.3.1 The material shall match in respect of colour with the appropriate reference ink prepared according to the composition prescribed under **4.2.3**. The test shall be carried out by making marks in the same manner and at the same time with the material under test and with the reference ink of the same colour, on a filter paper Whatman No. 40 or its equivalent.

---

*Glossary of terms relating to ink and allied industries.

†Also known at purple in trade.

TABLE 1 PERCENTAGE OF DYESTUFFS IN INK, STAMP-PAD

(*Clause* 4.2.3)

SL No.	COLOUR	NAME OF DYE	COLOUR INDEX No.	HUE NO.	PERCENT BY MASS
(1)	(2)	(3)	(4)	(5)	(6)
i)	Violet	Methyl violet	42535	Basic violet 1	3
ii)	Blue	Victoria blue	44045	Basic blue 26	4
iii)	Green	Brilliant green	42040	Basic green 1	3
iv)	Red	Crocein scarlet moo	27290	Acid red 73	3
v)	Black	Nigrosine	50420	Acid black 2	7

4.3.2 The material shall stand the performance test as prescribed in Appendix B.

4.4 Colour Fastness — When tested according to the method prescribed in Appendix C, the stripes shall be no more affected in respect of resistance to light than those of the reference ink made from the appropriate dye in concentration recommended under **4.2.3.**

5. PACKING AND MARKING

5.1 Packing — The ink shall be packed in containers of 30, 60, 120-ml and in any other bigger size as agreed to between the purchaser and the supplier. These containers shall be packed in packages of 10. In case of Grade B ink, the pad assembly shall be heat sealed.

5.2 Marking — Each container shall bear a label with the following information:

a) Name, colour and grade of the material;

b) Manufacturer's name and/or his recognized trade-mark, if any; and

c) Lot number to enable the batch of manufacture to be traced from records.

5.2.1 The containers may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

6. SAMPLING

6.1 Representative samples of the material shall be drawn and adjudged as prescribed in Appendix D.

APPENDIX A

(Clause 4.2.1)

DETERMINATION OF GLYCEROL (GLYCERINE)

A-0. GENERAL

A-0.1 Two methods are prescribed for determination of glycerol. In case of dispute method given in **A-2** shall be the referee method.

A-1. METHOD 1

A-1.1 Principle — The method depends upon the reaction that glycerol (glycerine) is oxidized readily by potassium dichromate in acid medium. The procedure described under **A-1.3** does not give accurate results if the ink contains other oxidizable matter not removed by the treatment with activated charcoal and filtration as prescribed under **A-1.3.1.**

A-1.2 Reagents

A-1.2.0 *Quality of Reagents* — Unless specified otherwise, pure chemical and distilled water (*see* IS : 1070-1977*) shall be used in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

---

*Specification for water, for general laboratory use *(second revision*).

A-1.2.1 *Activated Charcoal* — Powder.

A-1.2.2 *Standard Potassium Dichromate Solution* — Dissolve 75 g of potassium dichromate, weighed accurately, in 500 ml of water in a 1 000-ml measuring flask, and make up the volume to the mark.

A-1.2.3 *Standard Sodium Thiosulphate Solution* — 0.1 N approximately.

A-1.2.4 *Potassium Iodide Solution* — 10 percent (m/v) approximately.

A-1.2.5 *Concentrated Sulphuric Acid* — *See* IS : 266-1977*.

A-1.3 Procedure

A-1.3.1 Weigh accurately a sample of the material equivalent, approximately, to 1.5 g of glycerol (glycerine) in a 250-ml beaker. Add 150 ml of water and dissolve the ink, by warming, if necessary. Add about 5 g of activated charcoal, and heat, with stirring, for 2 hours over a water-bath. Filter while still warm, through a filter paper into a 500-ml volumetric flask, washing the filter paper thoroughly with cold water. Make up to volume and shake well.

NOTE — While testing black stamp-pad ink, where nigrosine or similar dyes have been used, removal of the dyes with activated charcoal is sometimes not complete. In such cases, 5 ml of concentrated sulphuric acid may be added before the addition of activated charcoal.

A-1.3.2 Pipette 50 ml of the solution into a beaker, add 75 ml of standard potassium dichromate solution and 25 ml of concentrated sulphuric acid, cover with a watch-glass, and heat to 90 to 100°C for about one. hour. Cool, transfer the solution to a 1 000-ml measuring flask and make up to volume with water. Mix thoroughly, withdraw a 50-ml aliquot of this solution, add 20 ml of potassium iodide solution, and titrate with standard sodium thiosulphate solution.

A-1.3.3 Conduct a blank test using the procedure prescribed under **A-2.2** but using water instead of the solution.

A-1.3.4 *Calculation* — Calculate on the basis that 7.454 3 g of potassium dichromate is equivalent to 0.8 ml of glycerine:

$$\text{Glycerol (glycerine), percent by volume} = \frac{8N(A - 20BC)}{M}$$

---

*Specification for sulphuric acid (*second revision*).

where

$$N = \frac{\text{Mass of potassium dichromate taken in one litre of solution}}{74.543};$$

A = volume in ml of standard potassium dichromate solution added;

B = volume in ml of standard sodium thiosulphate solution required;

C = volume in ml of standard potassium dichromate solution equivalent to 1 ml of standard sodium thiosulphate solution; and

M = mass in g of the material taken for the test.

A-2. SODIUM PERIODATE OXIDATION METHOD

A-2.1 Principle — The method depends upon the reaction that glycerol and other polyalcohols containing three or more adjacent hydroxy groups is oxidized by sodium periodate in acid medium, forming aldehydes and formic acid. The latter is a measure of the glycerol in the sample.

A-2.2 Reagents

A-2.2.0 *Quality of Reagents* — Same as in **A-1.2.0.**

A-2.2.1 *Activated Charcoal* — Powder.

A-2.2.2 *Sodium Periodate Solution* — Dissolve 60 g of sodium periodate in one litre in a 1 000-ml measuring flask containing 120 ml of 0.1 N sulphuric acid.

A-2.2.3 *Standard Sodium Hydroxide Solution* — 0.125 0 N. (*see* **54** of IS : 2316 - 1968*).

A-2.2.4 *Sodium Hydroxide Solution* — 0.05 N.

A-2.2.5 *Dilute Sulphuric Acid* — 0.2 N.

A-2.2.6 *Bromothymol Blue Indicator Solution* — 0.1 percent in distilled water.

A-2.2.7 *Ethylene Glycol Water Solution* — Mix 1 volume of ethylene glycol with 1 volume of water.

---

*Method of preparation of standard solutions for colorimetric and volumetric analysis.

A-2.3 Procedure

A-2.3.1 Weigh accurately a sample of the material, approximately, to 1.5 g of glycerol (glycerine) in a 250-ml beaker. Add 150 ml of water and dissolve the ink, by warming, if necessary. Add about 5 g of activated charcoal, and heat, with stirring, for 2 hours over a water bath. Filter while still warm, through a filter paper into a 500-ml volumetric flask, washing the filter paper thoroughly with cold water. Make up to volume and shake well.

A-2.3.2 Pipette 50 ml of the solution into a 500-ml beaker. Add 5-7 drops of bromothymol blue indicator and acidify, with dilute sulphuric acid to definite green or greenish yellow colour. Neutralize with sodium hydroxide solution (0.05 N), to indicator end point, a definite blue free of green colour. Add a drop at a time when approaching the end point, sharp green to blue transition. When colour of solution interferes with the detection of the colour change of the indicator, use the *p*H meter and adjust to *p*H 8.1 ± 0.1.

A-2.3.3 Prepare a blank containing 50 ml of water but no glycerol and carry thorough simultaneously with the sample in an identical manner using the indicator to adjust the *p*H before adding the sodium periodate solution.

A-2.3.4 Add 50 ml of sodium periodate solution with a pipette, swirl gently to ensure thorough mixing, cover with a watch glass and allow to stand for 30 minutes at room temperature in the dark. If the room temperature exceeds 35°C both the reagents and solution of the sample must be cooled to 35°C or less before mixing and must be maintained below this temperature until titration.

A-2.3.5 At the end of this period add 10 ml of 50 percent ethylene glycol-water solution and allow to stand for 20 minutes.

A-2.3.6 Dilute to approximately 300 ml and titrate with standard sodium hydroxide solution (0.125 N), using *p*H meter to determine the end point at *p*H 6.5 ± 0.1 for the blank and 8.1 ± 0.1 for the sample. When approaching the end point, add the alkali a drop or part of a drop at a time.

A-2.4 Calculation

$$\text{Glycerol (Glycerine), percent by mass} = \frac{(A-B)\times N \times 9{\cdot}209}{M}$$

where

A = volume in ml of standard sodium hydroxide solution used to titrate sample;

B = volume in ml of standard sodium hydroxide solution used to titrate blank;

N = normality of standard sodium hydroxide solution; and

M = mass of the sample (in aliquot).

APPENDIX B

(*Clause* 4.3.2)

PERFORMANCE TEST

B-1. APPARATUS

B-1.1 Blotting Paper — conforming to Grade 2 of IS : 1396-1960* and having a substance of 140 ± 4 g/m^2 or equivalent.

B-1.2 Blotting Paper Stamp-Pad — Cut a piece of blotting paper measuring 75 × 75 mm and keep it on a piece of smooth sheet glass or other suitable surface.

B-1.3 Rubber Stamp I — Having at least two lines and capable of giving sharp and clear impressions.

B-1.4 Rubber Stamp II — Which gives impressions of cross mark.

B-2. PROCEDURE

B-2.1 Spread one millilitre of the material uniformly over the surface of the blotting paper stamp-pad. Using the rubber stamp (*see* **B-1.3**), take the number of impressions specified in **B-2.2** at a stretch on writing paper (*see* IS : 1848-1981†). Keep the blotting paper stamp-pad in a cupboard, without cover, for 24 hours. At the end of this period, take at least 9 further impressions with the rubber stamp from the stamp-pad.

Ink shall be considered to have passed the test if the following conditions are satisfied:

a) in case of Grade A, 16 impressions are clear and 9 impressions can still be taken after 24 hours.

---

*Specification for blotting papers.

†Specification for writing and printing paper (*second revison*).

b) in case of Grade B:

   1) 10 impressions are clear, and

   2) there is no offset of ink when a piece of writing paper stamped with rubber stamp prescribed at **B-1.4** is folded immediately after stamping.

APPENDIX C

(*Clause* 4.4)

TEST FOR COLOUR FASTNESS

C-1. PREPARATION OF STRIPES

C-1.1 Procedure — Place a sheet of paper having one minute cobb test value equivalent to cream wove/cream laid paper (*see* IS : 1848-1981*) with the felt side upwards and slightly stretched, on a piece of board or glass plate with a smooth surface. Adjust the board or glass plate so that the surface of the paper makes an angle of 45° with the vertical. Draw up one millilitre of ink in a 1-ml pipette and allow the nozzle just to touch the paper near the top edge, the pipette remaining vertical. Release the ink carefully to form a perfect stripe of uniform width across the paper. Prepare similar stripes with reference ink.

NOTE — When arranging the sheet of paper for making the stripes it is desirable to place it so that the ink will flow in the machine direction. There is a slight but definite difference in the arrangement of the fibres in the machine direction and at right angles to it. If a piece of paper about 25 mm square is laid on water, in a moment or two it starts to curl up on two opposite edges and thus makes a shallow trough. The axis of the trough is parallel to the machine direction of the paper. If the ink flows across the machine direction the paper will become wrinkled across the stripes, these will then be unevenly coloured.

C-2. DAYLIGHT EXPOSURE

G-2.1 Procedure — Dry the stripe prepared in **C-1.1** for 15 min and remove it from the board. Cut off a stripe of paper 4 cm in width from the bottom of the sheet at right angles to the stripe and reject it. Cut the remaining paper into stripes, each 5 cm wide and at right angles to the stripes. Expose the stripes for 8 days to air and diffused daylight in the shade. At the same time and under the same conditions, perform the experiment with the reference ink (*see* **4.2.3**).

---

*Specification for writing and printing paper (*second revision*).

C-2.1.1 Dilute the ink and the reference ink with an equal volume of water and repeat the experiment.

C-2.1.2 The stripes of the ink shall show a close match to those of the reference ink and the stripes of the diluted ink shall show a close match to those of the diluted reference ink.

C-3. ULTRA-VIOLET RAY EXPOSURE

C-3.1 Place the papers containing the stripes from ink and the reference ink at a distance of 25 cm from an ultra-violet lamp (*see* **C-3.1.1**) normal to the rays, and expose for a total period of 36 hours. Expose the papers containing the stripes from diluted ink and diluted reference ink in the same manner but for a total period of 27 hours.

C-3.1.1 The ultra-violet lamp shall be of 125 W and of long wave ultra-violt region chiefly at 3655 A°.

C-3.1.2 The darkness (intensity) of the stripes from the ink and the diluted ink shall be at least equal to that of the stripes from the reference ink and the diluted reference ink respectively.

APPENDIX D

(*Clause* 6.1)

SAMPLING OF INK, STAMP-PAD

D-1. GENERAL REQUIREMENTS OF SAMPLING

D-1.0 In drawing, preparing, storing and handling test samples the precautions and directions given in **D-1.1** to **D-1.6** shall be observed.

D-1.1 Samples shall not be taken in an exposed place.

D-1.2 The sampling equipment shall be clean and dry.

D-1.3 Precautions shall be taken to protect the material being sampled, the sampling equipment and the containers for sample from adventitious contamination.

D-1.4 To draw a representative sample from each selected bottle, its contents shall be thoroughly mixed.

D-1.5 The samples shall be filled in clean, dry, airtight glass containers with suitable stoppers and each of the sample containers be marked with full details of the material as given in **5.2** and the date of sampling.

D-1.6 The sample containers shall be of such a size that they are almost completely filled by the sample.

D-2. SCALE OF SAMPLING

D-2.1 Lot — All the bottles in the single consignment coming from the same batch of manufacture shall be grouped together to constitute a lot.

D-2.2 Samples shall be tested from each lot separately for ascertaining the conformity of the material to the requirements of this specification.

D-2.3 The number (*n*) of bottles to be selected for sampling shall depend upon the number of bottles in the lot and shall be in accordance with col 1 and 2 of Table 2.

D-2.4 The bottles shall be selected at random from the lot. To ensure the randomness of selection, a random number table may be used. For guidance to random selection procedures, reference may be made to IS : 4905-1968*.

TABLE 2 NUMBER OF BOTTLES TO BE SELECTED FOR SAMPLING

(*Clause* D-2.3)

No. OF BOTTLES IN THE LOT N (1)	No. OF BOTTLES TO BE SELECTED n (2)
Up to 15	2
16 to 50	3
51 to 150	5
151 and above	8

D-3. TEST SAMPLES AND REFEREE SAMPLES

D-3.1 Before drawing the samples, the material in the bottles chosen (*see* **D-2.3**) shall be thorougly mixed by shaking or stirring. Samples shall then be drawn with the help of a suitable sampling equipment.

D-3.2 From each of the selected bottles from a lot take out a small quantity of ink and mix it thoroughly. Out of these portions from each selected bottle, about 5 ml of the ink shall be taken and these shall be well mixed up together so as to form a composite sample. This sample shall be divided into three equal parts, one for the purchaser, another for the supplier and the third for the referee.

---

*Method for random sampling.

D-3.3 From each of the selected bottles a samples of 10 ml of ink, to be called the individual sample, shall be drawn. All the individual samples so obtained shall be transferred to sample containers and marked with all the details of sampling. These samples shall then be separated into three identical sets of samples in such a way that each set has an individual sample representing each bottle selected (*see* **D-2.3**). One of these three sets shall be for the purchaser, another for the supplier and the third for the referee.

D-3.4 Referee Sample — Referee sample shall consist of one composite sample (*see* **D-3.2**) and a set of individual samples (*see* **D-3.3**) marked for this purpose and shall bear the seals of both the purchaser and the supplier. It shall be kept at a place agreed to between the two and shall be used in case of dispute.

D-4. NUMBER OF TESTS

D-4.1 Tests for the determination of glycerol content shall be conducted on the composite sample (*see* **D-3.2**).

D-4.2 Tests for determining the remaining characteristics shall be conducted on each of the individual samples constituting a set of test sample (*see* **D-3.3).**

D-5. CRITERIA FOR CONFORMITY

D-5.1 For Composite Sample — In respect of glycerol content the lot shall be considered to meet the specification if the test result on the composite sample satisfies the corresponding requirement (*see* **4.2.1**).

D-5.2 For Individual Sample — For the remaining characteristics, the lot shall be considered to meet the specification if the test results on the individual samples satisfy the corresponding requirements (*see* **4**).

D-5.3 The lot shall be deemed as conforming to the requirements of this specification if it satisfies the relevant criteria given in **D-5.1** and **D-5.2.**

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